

# Transformation and Migration of Healing Rituals from Indigenous Cultures to the West: Amphibian Secretions, the ‘Frog Medicine and Toad Medicine’

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## Abstract

Interest in shamanism and its rituals steadily increases since 1980. Healing rituals are often sought by people who wish to cure certain diseases, to cleanse, transform and re-establish a balance between body, emotions and spiritual aspects.

Since some decades, amphibian secretions, referred to as the ‘frog medicine (Kambo) and toad medicine’ are used during such rituals. Kambo is secreted by an Amazonian frog, the *Phyllomedusa bicolor*, and the other secretion is by a North-American toad, the *Bufo Alvarius*. Kambo consists of a number of bioactive peptides, and the toads’ secretion consists of a number of psychoactive tryptamines. The pharmacological insights in both these secretions are mainly based on the work of the Italian professor Vittorio Erspamer.

Kambo was originally used by Amazonian tribes to improve hunting skills, and the secretion of the toad has been discovered as a powerful transformer of consciousness in the early 60s.

Since some decades, healing rituals have been developed, mainly in Brazil, Europe and the USA, based on perceived cleansing and healing properties of both secretions. These rituals are now gaining popularity, and the medical community should be aware of the relevance of these rituals for the users, as well as of contraindications, potential side-effects and interactions.

## Introduction

For practicing MDs, it is increasingly important to understand what patients may all undertake for reducing their symptoms, curing diseases or promotes healing. Surprisingly for many, this can for instance be the intake of secretions from frogs and toads. Once, in medieval times, nobody would wonder much about it, but in our 21<sup>st</sup> century many physicians find this a bit strange, if not quite aberrant. We will see that in our Western world, ancient traditions are revived in the form of neoshamanic rituals, where secretions of a frog or a toad are used for healing purposes. This is quite interesting, since the pharmacology of the active compounds in the secretions of this frog and toad are completely different. Both secretions are referred to as ‘medicines’ by members of the neoshamanic subculture. The frog we will discuss in this paper lives in the Amazonian forest, the *Phyllomedusa bicolor*, the toad is the North American desert toad, *Bufo Alvarius* (according to modern nomenclature *Incilius alvarius*). The frog is the source of a secretion containing a number of bioactive peptides, called Kambo [1]. The toad is the source of a secretion containing bioactive tryptamines, especially 5-methoxy-N, N-dimethyltryptamine (5-MeO-DMT), and bufotenin [2,3]. The frog lives in the Amazonian forests of Brazil and Peru, the toad in North America, mostly in California, Arizona, and New Mexico.

Due to the fact that we live in a postmodern society, the impact of medical authority on society is reduced, and even the American president is reported to have said, related to the flu shot: ‘I don’t like the idea of injecting bad stuff into your body’ [4]. Clearly there is a general tendency in our society to move away from pure scientific facts, and rely on ‘alternative facts’, also in case of health and disease. One of the tendencies of our postmodern culture is a shift in attention of a subgroup of mostly mid class people with higher educational backgrounds, towards non-rational ways of healing and curing such as complementary treatments and shamanism. The anthropologist Michael Harner, founder of the Foundation for Shamanic Studies, related the growing interest in shamanism and its revival since the 1980, to the fact that people started to be unhappy with the classical medical approach of health and disease, based on the perceived solid scientific facts [5]. Instead of- or in addition to- conventional medicine, people are starting to look for their own healing processes and rituals. Both secretions of the frog and toad play a role in recent neoshamanic rituals, emerging

in the West (Europe, USA) for the purpose of healing. For instance, in the Netherlands such rituals started to be popular in a subculture since 1970; Kambo rituals are a relative new phenomenon starting in this century. We will outline the essence of these rituals and discuss some differences and similarities of both secretions, based on pharmacology and method of use and effects.

### Kambo and Sapo: Terminology

The terms Kambo and Sapo, are sometimes used as synonyms in scientific literature and in popular websites. This has been initiated by the indigenous tribe of the Matses people from the Amazon, they called Kambo Sapo in some instances, but Sapo is the Spanish word for toad. As Spanish was not their first language, erroneously the Matses referred to the origin of Kambo, the frog *P. Bicolor* as a 'toad'. Peter Gorman, an amateur anthropologist who first brought Kambo use to the light in the early 90s of last century, states: 'When the medicine was first brought out it came from the Matses, who were just learning Spanish in the mid-1980s. The only word they were taught for all frogs and toads was Sapo. In their own dialect, they had distinct names for every different type of frog, (*Rana* in Spanish) and toad (*Sapo* in Spanish). The Matses that I remain in contact with since I brought this medicine out of the jungle still call it Sapo, though they now speak enough Spanish to know the proper word would be *Rana* (frog). The frog is called *Da -kiet!*, with accent on last syllable' [6] Although there are numerous sources using both words interchangeable, it is recommended to use the word 'Kambo' for the secretion of *P. bicolor*, and not Sapo. There is no special name for the secretion of the *B. Alvarius*.

### Pharmacological aspects of the secretions

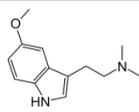
While Kambo consists of a great number of bioactive peptides, the toads' secretions rich in tryptamines. The pharmacological effects are quite different. Kambo application (entering the lymphatic system via a fresh burn) does mainly lead to brief cardiovascular and gastrointestinal effects (hypotension, palpitations, nausea, vomiting and edema), the toads' secretion (ingested via smoking) induces a brief hallucinogenic state (Table 1).

In 1965 the group of the famous professor Vittorio Erspamer explored the skin of the desert toad and they described for the first time, in addition to the usual 5-hydroxyindolealkylamines enormous amounts of 5-methoxyindole derivatives, especially the hallucinogenic compounds 5-methoxy-N,N-dimethyltryptamine (5-MeO-DMT) and bufotenine, as well as 5-methoxy-N-methyltryptamine and 5-methoxyindolacetic acid (5-MIAA) [7]. The first psychoactive effects of the secretion of the *B. Alvarius* is probably first described in 1929, after the author took away a toad that was attacked by a dog [8]. He stated: 'I became very sick myself, my head was swimming, and there was a lifting feeling in my lung cavity. It affected me rather peculiarly, as I wanted to walk and keep walking.' These feelings lasted for 30 minutes. The author suggested that the origin of the intoxication was the secretion from a gland of the toad, which could enter the body via the mucous membranes. In more recent recreational use in a transpersonal context, the secretion is dried and smoked, inducing brief vivid hallucinations and revelations to the user [3,9].

### Kambo consists of 16 bioactive peptides

Adenoregulin, bombesin, bombesin-nonapeptide, bradykinin, caerulein, deltorphin, neurokinin B, phyllomedusin, phyllocaerulein, phyllokinin, phyllolitorin, preprotachykinin B, ranatatykinin A, sauvagine, T-kinin and urechistachykinin II [10]. The general peripheral effects of these peptides are cardiovascular and gastrointestinal effects on smooth muscle contraction, and gastric and pancreatic secretions. Caerulein induces symptoms such as nausea, vomiting, facial flush, tachycardia, changes in blood pressure, sweating, abdominal discomfort and urge for defecation. The gastrointestinal symptoms in the early phase of Kambo ritual are a result of the action of this peptide. Caerulein also provokes contraction of the gall bladder, a reason for the yellow vomit ('cleansing the liver'). Phyllokinin lowers the blood pressure, giving also rise to compensatory increase of the heart frequency, felt as palpitations. Phyllomedusin also lowers blood pressure, and activates salivation and stimulates intestinal motility. Sauvagine also has a hypotensive effect, leads to diarrhea and has a potent vasodilator effect, and is perhaps the main reason for the facial edema. The vasodilatation effect might also perhaps enhance the penetration of the CNS active neuropeptides dermorphin and the like into the central nervous system, perhaps contributing to the euphoric feeling after a Kambo-session.

**Table 1:** Key aspects of the secretions of *P. Bicolor* and *B. Alvarius*.

Secretion of:	<i>P. Bicolor</i> (Kambo)	<i>B. Alvarius</i>
Animal species	Amazonian tree frog	North American desert toad
Active compounds	16 bioactive peptides	Tryptamines
Main active compound(s)	caerulein, phyllomedusin, sauvagine, dermorphin, phyllokinin	 5-MeO-DMT
Main biological effects	Cardiovascular and gastrointestinal system	CNS-related- psychoactivity
Anthropological roots	Hunting improvement since centuries by indigenous tribes of the Amazon	Started during the counter-culture in the 60s
Anthropological dissemination to the West	Via the Ayahuasca rituals, starting in Brazil (Santo Daime)	Via the counter-culture
Route of administration	Via a fresh blister	Inhalation

## The use of Kambo and Bufoalvarius secretions inneoshamanic rituals

Both rituals using secretion of the frog or the toad, and sometimes rituals where both compounds are administered on separate days, gain increasingly popularity in a subculture in Europe and the USA. This subculture embraces neo-shamanism and refers to secretions as the 'frog-medicine' and the 'toad-medicine'. Kambo rituals initially were simple, and were applied by the Amazonian people on themselves or their friend, there were no shaman's involved. Later Kambo rituals started to move into urban areas in Brazil, and neoshamanistic elements were added from a great many sources, such as from Ayahuasca rituals and North-American Indian rituals up to Cannabis rituals from Sadhus in India. It is easy to learn the structure of those rituals, as many examples can nowadays be found on Youtube. From the various testimonies, it is clear that most participants wish to cleanse themselves from either old traumas, or to correct emotional and spiritual imbalance, and feel the frog and toad medicines are exactly doing that. In a separate article, we have discussed many of the testimonies of people undergoing such rituals. Rituals emerging now in the west can be classified as neoshamanic rituals.

Neoshamanic rituals using such secretions from amphibians can be discussed and positioned in the context of modern transpersonal psychology. The psychiatrist Stanislav Grof was one of the founders of transpersonal psychology, and he coined the term 'holotropic states of consciousness', from the Greek words 'holos' which refers to 'whole' and 'tropos' and meaning moving in a specific direction. Holotropic consciousness is consciousness moving towards wholeness [11]. The term did not generate interest in general psychology, but certainly it contributed much in the field of transpersonal psychology. It is exactly this branch of psychology which focusses on our healing, transformative and evolutionary potential. In holotropic states according to Grof we can transcend the narrow boundaries of the body ego and encounter a rich spectrum of transpersonal experiences that help us to reclaim our full identity [12]. Interestingly, while the initial transpersonal psychology focused extensively on altered states of consciousness, more recent attention reveal a much broader approach to human transcendence, wholeness, and transformation, in line with Grof's holotropic state of consciousness [13]. Grof pointed out that the most radical innovation in the therapeutic field has been approaches such as the use of psychedelic drugs (5-MeO-DMT) changing the state of consciousness of the clients (11:p.14).

One of the three main themes studied in transpersonal psychology is related to transformation, either personal (self-actualization, psychospiritual growth, embodied knowledge, out-of-the-box thinking and behavior, also described as 'transconventional development', or related to social transformation (applications of transpersonal psychology in business, education, therapy and ethical thinking combined with right action [13]. It is exactly this realm which defines the context of many experiences of the secretions of users and practitioners. To illustrate this, we present three testimonies. In such testimonies indicators for the transformation and healing can be found. One Dutch participant of a Kambo ritual for instance wrote: 'I want to let you know that I feel fantastic last days! What a gift from the Kambo, I only now notices how hard I needed it again. What a wonderful feeling to be able to come home again, thank you again!' [14]. Another participant: 'I am very grateful that it has come my way, is really a key in my healing process, I am convinced. I now experience

a very nice rest in my body and am much more aware of who I am, being, the Self and the voices in my head and beliefs etc' [14]. And: 'I am happy and grateful that, despite my fear, I did Kambo. Something is opening up in me that will lead me to the 'origin' of my fear and especially my cramp. It has affected me so much my whole life. Last night I could feel something that brings me closer to that part where I think it comes from, even though it may not be easy to define' [14].

The participants all clearly experienced a healing process, bringing more clarity to them about their own being, and 'resetting' their own system. Moreover, we find a number of indicators for personal transformation, as defined in the transpersonal psychology as we discussed above: self-actualization, psychospiritual growth and embodied knowledge.

All three testimonials, and many other of the web, support Grof's notion of the importance of 'holotropic consciousness' for our well-being, and show that Kambo can be a vehicle bringing such state into realization in individuals participating in Kambo rituals.

The same impressions can be found in the internet by users of the toad secretion, although the psychedelic effects also add more intense transpersonal experiences. Sometimes rituals promote the use of Kambo first to cleanse, and subsequently Ayahuasca, together with the toad's secretion, all in a typical neoshamanic context [15].

## Side effects or adverse effects, contraindications and interactions

An Adverse Drug Reaction (ADR) is an unwanted, undesirable effect of a medication that occurs during usual clinical use. One distinguishes two types of side effects: type A, due to augmented pharmacologic effects, those effects are dose dependent and predictable and occur regularly and type B, side effects which are idiosyncratic and unpredictable; those effects in general are rare. In the context of the ritual use of the secretions of frog and toad, we have to understand that the intake is defined as regular clinical use, and it is exactly due to the intense pharmacological actions of those secretions that people use these. Kambo contains vaso-active, neuro-active and gastrointestinal active peptides, and all side effects, from facial swelling up to nausea and vomiting are solicited as part of the general cleansing ritual. While any MD without knowing the pharmacology of Kambo would classify the entire complex of symptoms as a transient anaphylactic shock, and act accordingly, Kambo users and participants in the rituals understand the reactions of their body is based on the intrinsic properties of the secretion. For the secretion of Bufo Alvarius, the same holds true, but in this case, intense transpersonal effects are expected, and one can therefore label these based on the context of the user looking for healing as desirable. However, any outside doctor would be concerned, and label the reactions as undesirable hallucinations.

Interactions of 5-MeO-DMT with monoaminooxidase inhibitors are life-threatening, so any combination between BufoAlvarius secretion or pure 5-MeO-DMT and MOA-I antidepressants are to be avoided [16]. Due to the possibility of a serotonergic syndrome, combinations with other antidepressants or antipsychotics are also discouraged. In literature is a report of fatal overdose with ayahuasca combined with 5-MeO-DMT [17]. Panic attacks, 'bad trips' and induced psychotic or depressive reactions are known in users with a preexisting psychopathology [18].

For Kambo we have reviewed the adverse effects in a previous paper [19]. There were a number of case-reports on expected pharmacological reactions, but due to the intensity they gave rise for concern. For instance, a 24-year-old woman was brought to the emergency department, due to nausea, vomiting, flushing, facial swelling, altered mental status, and agitation 22h after a Kambo ritual. In another case, prolonged nausea, frequent episodes of vomiting, (circa 50) and abdominal discomfort was reported, up to 8 hours after a Kambo. In one case, there was an important pharmacodynamics interaction reported due to the ingestion of too much water before and after the ritual, six liters were drunk giving rise to a transient Syndrome of Inappropriate Antidiuretic Hormone (SIADH) secretion.

One patient was reported with signs of a transient hepatitis, in the patient history a chronic alcohol abuses and Cannabis use; patient used Kambo to maintain abstinence of drinking and smoking. Important was the report of the sudden death of a 42-old overweight man with signs of coronary pathology, who administered himself Kambo, and was alone during the entire period. It was suggested that in this case perhaps the hypotensive effects of Kambô could have resulted in reduced myocardial perfusion, tachycardia perhaps leading to a cardiac arrhythmia and sudden death. The last case brings us to contra-indications of Kambo.

Various contraindications for the use of Kambo are suggested in the net, including all kinds of cardiovascular, hematological, neurological and psychiatric disorders, however, mostly without referring to any source. Based on recent case-reports one could argue to exclude people suffering from severe and unstable cardiovascular conditions, cardiac failure, hypotensive syndromes such as Shy-Drager, and treatment refractory psychiatric disorders. One should recommend not drinking too much water after a ritual, in order not to provoke a SIADH syndrome. Furthermore, as it is said that Kambo seems to be used by the tribes to terminate pregnancies, one would like to exclude pregnant women.

Interactions between Kambo and other substances have not been reported officially, apart from in one case [17], but given the multitude of bioactive peptides, we recommend to not combine Kambo on the same day with substances such as Ayahuasca, Jurema, Iboga and other entheogens, and avoid its use in case of polypharmacy.

It is further always recommended for those who want to take part in a ritual, to check whether the practitioner has vast experience with the secretions. Furthermore, it would be recommended to discuss the intention of participating in these rituals with the family physician.

## Conclusion

Healing rituals based on exotic compounds are increasingly sought by people who wish to cure certain diseases, to cleanse or to transform and re-establish a balance between body, emotions and our spiritual aspects. Amphibian secretions, referred to as the 'frog medicine (Kambo) and toad medicine' are sometimes used during such rituals. Kambo is secreted by an Amazonian frog; the other secretion is by a North-American toad. Kambo consists of a number of bioactive peptides, and the toads' secretion consists of a number of psychoactive tryptamines.

In the West, based on a synthesis of a number of neoshamanic traditions, healing rituals are developed, for the purpose of cleansing and healing. Such rituals are now gaining popularity, and insight by the medical community in the relevance of these rituals for the users is important, as well as in the potential contraindications, side-effects and interactions.

Certain precautions are mandatory, it is recommended not to use combinations, and take notice of possible interactions with regular medicines, and side-effects. It is always recommended for those who want to take part in a ritual, to check whether the practitioner has enough experience with administering the secretions. Furthermore, it is recommended to discuss the intention of participating in these rituals with the family physician.

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